

Application Serial No.: 09/855,754
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pertussis, or mixtures thereof. The *Bordetella bronchiseptica* pertactin variants can be full length or a fragment.

Page 18, first full paragraph, lines 1-9:

In a further embodiment, the invention provides a composition comprising a mixture of *Bordetella bronchiseptica* pertactin variants, wherein one of the *Bordetella bronchiseptica* pertactin variants comprises Region II of pertactin of *Bordetella bronchiseptica* having 6, 7, 8, or 9 repeating PQP amino acid sequences in Region II thereof, and another of the *Bordetella bronchiseptica* pertactin variants comprises Region I of pertactin of *Bordetella bronchiseptica* having 1, 2, or 3 repeating GGXXP amino acid sequences (SEQ ID NO: 25) in Region I thereof. This composition can also comprise pertactins of *Bordetella parapertussis*, *Bordetella pertussis*, or mixtures thereof. The *Bordetella bronchiseptica* pertactin variants can be full length or a fragment.

Please replace the Sequence Listing previously submitted with the substitute Sequence Listing submitted herewith.

IN THE CLAIMS:

Please amend claims 59-61, as follows:

(C5) 59. (AMENDED) The immunogenic composition of claim 56, wherein the pertactins of *Bordetella* species, fragments and variants thereof, comprise at least one of:

**FINNEGAN
HENDERSON
FARAB W
GARRETT &
DUNNER LLP**

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(A) 1, 2, or 3 repeating GGXXP amino acid sequences (SEQ ID NO: 25) of Region I; and

(B) 6, 7, 8, or 9 repeating PQP amino acid sequences of Region II.

60. (AMENDED) The immunogenic composition of claim 56, further comprising at least one of:

(A) 1, 2, or 3 repeating GGXXP amino acid sequences (SEQ ID NO: 25) of Region I; and

(B) 6, 7, 8, or 9 repeating PQP amino acid sequences of Region II

of the pertactins of at least one of:

(C) *Bordetella bronchiseptica*;

(D) *Bordetella parapertussis*; and

(E) *Bordetella pertussis*.

61. (AMENDED) The immunogenic composition of claim 58, further comprising at least one of:

(A) 1, 2, or 3 repeating GGXXP amino acid sequences (SEQ ID NO: 25) of Region I; and

(B) 6, 7, 8, or 9 repeating PQP amino acid sequences of Region II

of the pertactins of at least one of:

(C) *Bordetella bronchiseptica*;

(D) *Bordetella parapertussis*; and

(E) *Bordetella pertussis*.

Please add the following claims:

98. (NEW) An immunogenic composition comprising a pertactin of a *Bordetella*

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species, fragments and variants thereof, wherein the composition comprises pertactin of *Bordetella bronchiseptica* in an amount sufficient to induce a humoral or cellular immune response against at least one of:

- (A) *Bordetella bronchiseptica*;
- (B) *Bordetella parapertussis*; and
- (C) *Bordetella pertussis*;

in an animal to which the immunogenic composition is administered.

99. (NEW) The immunogenic composition of claim 98, wherein the pertactin of *Bordetella* species, fragments and variants thereof, comprise at least one of Region I, and Region II.

100. (NEW) The immunogenic composition of claim 98, further comprising at least one of Region I and Region II of the pertactin of *Bordetella bronchiseptica*.

101. (NEW) The immunogenic composition of claim 98, wherein the pertactin of the *Bordetella* species, fragments and variants thereof, comprise at least one of:

- (A) 1, 2, or 3 repeating GGXXP amino acid sequences of Region I (SEQ ID NO: 25); and
- (B) 6, 7, 8, or 9 repeating PQP amino acid sequences of Region II.

102. (NEW) The immunogenic composition of claim 98, further comprising at least one of:

- (A) 1, 2, or 3 repeating GGXXP amino acid sequences of Region I (SEQ ID NO: 25); and
- (B) 6, 7, 8, or 9 repeating PQP amino acid sequences of Region II

of the pertactin of *Bordetella bronchiseptica*.

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4400
Fax 202.408.4400
www.finnegan.com

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103. (NEW) The immunogenic composition of claim 100, further comprising at least one of:

- (A) 1, 2, or 3 repeating GGXXP amino acid sequences of Region I (SEQ ID NO: 25); and
- (B) 6, 7, 8, or 9 repeating PQP amino acid sequences of Region II of the pertactin of *Bordetella bronchiseptica*.

104. (NEW) The immunogenic composition as claimed in claim 98, wherein said composition further comprises a neutralizing amount of polypeptide SEQ ID NO: 8.

105. (NEW) The immunogenic composition of claim 99, wherein the composition comprises a neutralizing amount of polypeptide SEQ ID NO: 8.

106. (NEW) The immunogenic composition of claim 101, wherein the composition comprising a neutralizing amount of polypeptide SEQ ID NO: 8.

107. (NEW) A vaccine comprising an immunogenic composition according to claim 98 along with a pharmaceutically acceptable vehicle.

108. (NEW) A vaccination kit comprising at least an immunogenic composition according to claim 98, and means for administering the composition to an animal.

109. (NEW) An immunogenic composition as claimed in claim 98, wherein the composition further comprises at least one of an adhesin of *Bordetella* and a toxin of *Bordetella*; where in the adhesin is selected from at least one of FHA, AGG2, AGG3 and the toxin is selected from at least one of PTX, DNT, TCT, and Ac-Hly.

110. (NEW) An immunogenic composition as claimed in claim 101, wherein the composition further comprises at least one of an adhesin of *Bordetella* and a toxin of *Bordetella*; where in the adhesin is selected from at least one of FHA, AGG2, AGG3

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com